IRSTI 14.37.27

[1]Winter L., [2]Kambatyrova A., [3]Gungor D.

[1]Faculty of Education, University of Cambridge, Cambridge, Great Britain, e-mail: eaw53@cam.ac.uk
[2]Research Institute, Nazarbayev University Graduate School of Education,
Kazakhstan, Astana, akambatyrova@nu.edu.kz
[3]Research Institute, Nazarbayev University Graduate School of Education,
Kazakhstan, Astana, dina.gungor@nu.edu.kz

VALIDATION OF A SCALE TO ASSESS REGIONAL VARIATIONS IN ATTITUDES TOWARDS A PROFESSIONAL DEVELOPMEN PROGRAMME TO LEARN THE ENGLISH LANGUAGE FOR TEACHERS OF BIOLOGY, CHEMISTRY, PHYSICS AND INFORMATICS

The present paper describes research to record secondary school teachers' attitudes towards the initiative to teach certain subjects in English in Kazakhstan two years before the full roll-out of the nationwide reform. All participants were teachers of Biology, Chemistry, Physics or Informatics who were commencing a Professional Development Programme (PDP) to learn beginners' level English and basic subject content in English. The research adopted established conceptual frameworks of teaching subject content through a second language (Content Language Integrated Learning, CLIL) to develop a baseline survey to measure and provide insight as to regional differences in teacher-attendees' attitudes to elements of CLIL. The theoretical framework suggested a list of items that were then examined through exploratory factor analysis to indicate how well the theoretical framework applied. As anticipated, three sub-scales to represent three aspects of attitudes towards CLIL emerged: external factors such as permitted flexibility and overall coherence in the system (context); learning expectations in the classroom; and, checking of learning and communication in the classroom. Results showed that there were no significant regional differences in attitudes towards external elements to the initiative but there were regional differences around Kazakhstan in terms of teachers' expectations of their pupils' learning as well as attitudes towards checks on learning and communication due to the initiative of using English as a medium of instruction. These results of the survey are discussed in relation to the local proficiencies in English education, represented crudely by regional entries and performances by school-leavers in end-of-school tests. An alternative explanation for regional differences in the attitudes of those commencing a PDP programme is also presented.

Key words: Professional Development Programme, CLIL, teachers' attitude, English as the medium of instruction.

[1]Уинтер Л., [2]Камбатырова А., [3]Гюнгёр Д.

[1]Факультет образования, Кембриджский Университет, Великобритания, Кембридж, e-mail: eaw53@cam.ac.uk
[2]Департамент науки, Nazarbayev University Graduate School of Education, Республика Казахстан, г. Астана,
e-mail: akambatyrova@nu.edu.kz
[3]Департамент науки, Nazarbayev University Graduate School of Education, Республика Казахстан, г. Астана,
e-mail: dina.gungor@nu.edu.kz

Валидация шкалы оценки региональных различий в отношениях к курсам повышения квалификации, проводимым среди школьных учителей для обучения преподаванию биологии, химии, физики и информатики на английском языке

В статье описываются результаты научного исследования, посвященного изучению отношения учителей средних школ к инициативе преподавания определенных предметов на английском языке в Казахстане до процесса полномасштабной реализации данной реформы в

течение последующих двух лет. Участниками исследования были учителя биологии, химии, физики или информатики, приступившие к прохождению курсов повышения квалификации (КПК) для изучения английского языка на начальном уровне, и для преподавания своего основного предмета обучения на английском языке. В исследовании использованы широкоизвестные концептуальные основы преподавания предмета на втором языке (предметно-языковое интегрированное обучение, CLIL) при разработке базового опросника с целью замера и получения информации о региональных различиях в отношениях учителей к элементам CLIL. Теоретические основы, используемые в исследовании, указывают на перечень различных аспектов, которые были рассмотрены при помощи факторного анализа для выявления применимости теории. Как и ожидалось, выделены три подшкалы, представляющие три аспекта отношения к CLIL: внешние факторы, такие как допустимая гибкость и общая последовательность в системе (контекст); ожидания в процессе обучения и проверка усвоения материала и общения на уроке. Результаты проведенного опроса не выявили существенных региональных различий в отношениях к внешним элементам инициативы, но региональные различия возникли в части ожиданий учителей в процессе обучения их учеников, а также отношения учителей к проверкам результатов обучения и при использовании английского языка в качестве средства обучения. Эти результаты опроса рассматриваются по отношению к знаниям английского языка, представленным в общедоступных данных по результатам проводимых тестов среди выпускников школ. Также в статье представлено альтернативное объяснение региональных различий в отношениях среди тех, кто проходит КПК.

Ключевые слова: курсы повышения квалификации, предметно-языковое интегрированное обучение (CLIL), отношения учителей, английский язык как средство обучения.

[1]Уинтер Л., [2]Камбатырова А., [3]Гюнгёр Д.

[1]Кембридж Университетінің білім беру факультеті, Ұлыбритания, Кембридж қ., e-mail: eaw53@cam.ac.uk
[2]Ғылым департаменті, Nazarbayev University Graduate School of Education,
Қазақстан Республикасы, Астана қ., e-mail: akambatyrova@nu.edu.kz
[3]Ғылым департаменті, Nazarbayev University Graduate School of Education, Қазақстан Республикасы, Астана қ., e-mail: dina.gungor@nu.edu.kz

Биология, химия, физика, информатиканы ағылшын тілінде оқыту үшін мектеп мұғалімдерінің арасында өткізілген біліктілікті арттыру курстарына қатынастың аймақтық айырмашылықтарын бағалау шкаласын валидтеу

Мақалада Қазақстанда алдағы екі жыл ішінде аталған реформаны толығымен жүзеге асыру үдерісіне дейін нақты бір пәндерді ағылшын тілінде оқыту бастамасына орта мектеп мұғалімдерінің қатынасын білуге арналған ғылыми зерттеу нәтижелері сипатталады. Зерттеуге ағылшын тілін бастапқы деңгейде үйрену және өзінің негізгі пәнін ағылшын тілінде оқыту үшін кәсіби біліктілікті арттыру курсынан (БАК) өтуге кіріскен биология, химия, физика және информатиканы оқытатын мұғалімдер қатысты. Зерттеуде мұғалімдердің CLIL элементтеріне қатынасын өлшеу мақсатында базалық сұрақтарды әзірлеу және аймақтық айырмашылықтар туралы ақпараттар алу үшін пәнді екінші тілде (пәндік-тілдік кіріктірілген оқыту CLIL) оқытудың кең ауқымды тұжырымдамалық негіздері пайдаланылды. Зерттеудің теориялық негіздердің жарамдылығын анықтаудың факторлық талдаулардың көмегімен қарастырылғандығы әртүрлі аспектілердің тізімінен көрінеді. Біздің күткеніміздей, CLIL қатынасының үш аспектісін ұсынатын: жүйедегі жалпы бірізділік және рұқсат етілген икемділік, оқу үрдісіндегі күтілетін, сабақтағы материалдың меңгерілуін және коммуникацияны тексеру сияқты сыртқы факторлардың үш төменгі шәкілі бөлініп көрсетілді. Жүргізілген сауалнама нәтижелері бастаманың сыртқы элементтеріне қатынастың айтарлықтай аймақтық айырмашылықтарын көрсете алмады, бірақ аймақтық айырмашылықтар мұғалімдердің оқушыларды оқыту үдерісіндегі күтулерінде, сонымен қатар оқыту нәтижелерін тексеруде және оқыту құралы ретінде мұғалімдердің ағылшын тілін қолдануларында байқалды. Сауалнаманың бұл нәтижелері мектеп түлектері арасында жүргізілген қолжетімді сынақтардың нәтижелері негізінде айқындалған ағылшын тілін білу деңгейімен байланыстыра қарастырылады. Сонымен қатар мақалада БАК-қа қатысатын адамдардың қарым-қатынасындағы аймақтық айырмашылықтарға балама түсініктеме де беріледі.

Түйін сөздер: біліктілікті арттыру курстары, пәндік-тілдік (CLIL) кіріктірілген оқыту, мұғалімдердің қатынасы, ағылшын тілі оқыту тілі ретінде.

Introduction

First, a definition of Content and Language Integrated Learning (CLIL) is due: CLIL is an integrated approach to learning subject content through a second language (Mehisto et al, 2008) [1]. Effectively, this means that the native (or preferred, L1) language of a student is replaced by a second language (L2) and this is used as the medium of instruction to teach essential knowledge and skills for a particular subject such as Physics or any other discipline. By this process both content and language should be assimilated and combined to enhance the learning potential in two domains simultaneously. As Mehisto et al (2008) point out; the key word in this definition is 'integrated' so the learning of these two elements to the process should operate in harmony. Moreover, they do not interfere with either passing over essential information on a topic and inhibiting communication between the teacher and the learner or putting people off learning a language through over-reaction to mistakes when effective communication rather than precise use of grammar (say) is the priority. The dual pedagogic demands of teaching a subject in a second language could fall into two separate pedagogies: subject-related pedagogies and that of teaching a second language. However, rather than seek out separate expertise and approaches, these two facets to a CLIL approach need to be melded into one recognised blended approach with a pedagogic style all of its own (Mehisto et al, 2008).

For the purposes of the research described here, the conceptual framework used to represent this specific pedagogic approach is primarily based on that of Coyle (2008) [2] who suggests that the most effective way to adopt a CLIL approach is by recognising that the optimum environment for learning a subject through the medium of a second language is formed from four essential characteristics entitled the 4 Cs. These are Content, Cognition, Communication and Culture, as defined below:

'progression in knowledge, skills and understanding of the content, engagement in associated cognitive processing, interaction in the communicative context, the development of appropriate language knowledge and skills as well as experiencing a deepening intercultural awareness' (Coyle, 2008, p.551) [2-3]

Effectively it is the teacher who leads the process but it involves high expectations from the learners to be open to alternative perspectives and be motivated to engage in the CLIL process. This is achieved by adopting a cognitively demanding and dynamic communicative approach with students. Therefore, it is critical to examine the attitudes of teachers in their openness to adopting such an approach so the implementation of teaching content through a second language in Kazakhstan using CLIL and as facilitated by Professional Development Programmes (PDPs) can be optimised.

Parts of the process of adopting an effective CLIL approach include the way teachers assure themselves of their effectiveness through speaking with students and checking their learning either informally or formally through the use of assessment. Dalton-Puffer (2007) pays regard to this important activity in terms of a CLIL approach by referring to classroom discourses (e.g. Dalton-Puffer, 2007) [4] that allows a mutual construction of knowledge; classroom interactions; teacher directives; repair work and language functions. A related element to a CLIL approach includes the appraisal of learning outcomes – subject versus linguistic gains (e.g. Vollmer et al, 2006 and various EU appraisals) [5] so both work together and one of the two aims of a CLIL approach does not dominate to the neglect of the other. This goes beyond the simple act of communication described by Coyle (2008) in that it is purposeful and specific in terms of its function and not merely a development of second language speaking, listening and communication capacity in the students. A recent study by El-Bilawi and Nasser (2017) [6] takes this further in their examination of a PD course in Egypt specifically designed to enhance the teaching of English as a Foreign Language (EFL) by insisting on teachers being encouraged to become reflective practitioners whereby they self-reflect on their own pedagogic approaches in terms of learning outcomes. Clearly, learning expectations and appraisal of whether these are being met relate to adopting a reflective approach and whether this is particularly relevant and necessary characteristic of a teacher specific to CLIL and EFL or more generally is, as yet, an open question as far as the literature goes.

Looking at the context of Kazakhstan, it is important to indicate that Kazakhstan goes beyond much of the extant literature on CLIL since it is adopting not a bilingual approach in its educational system but a trilingual one (MoES, 2011) [7]. There are two official languages (Kazakh and Russian) with Kazakh as the state language and Russian as an «official» language that bears the status of the language of interethnic communication. The State Program of Development and Functioning of Languages of Kazakhstan for 2011-2020 aims to

maintain «harmonious language policy ensuring full-scale functioning of the state language as the most important factor of strengthening Kazakhstan's identity and unity while preserving the languages of all ethnic groups living in Kazakhstan» (MoES, 2011). It is worth noting that «according to the 2009 census, Kazakh language is understood by 74% of the population but is written and read fluently by only 62%. Around 94% of the population understands spoken Russian, and 88.2% is fluent in reading and 84.8% in writing it. English is understood by 15.4% and written and read fluently only by 10.2%» (OECD, 2014, p.27-28) [8]. Schools in Kazakhstan offer either Russian or Kazakh medium of instruction with some additional schools offering the minority languages of Uzbek, Uyghur and Tajik. Statute says that the variety of languages found in Kazakhstan need to be preserved whilst clear targets are set to accomplish a trilingual nation in the meanwhile (MoES, 2011). Part of this includes developing use of the Kazakh language such that the proportion of the adult population having a satisfactory score in the national test of Kazakh, Kaztest, rises from 20% in 2014, to 80% in 2017 and 95% by 2020. By the same token, it is anticipated that 90% will be able to speak Russian by 2020. Most pertinently to this research, the aims for speaking English are to achieve 15% of the population by 2017 and 20% by 2020 (Mehisto, Kambatyrova, & Nurseitova, 2014) [9].

Overall, this will be accomplished by following through a trilingual policy in schools as of September 2019 whereby not only are the languages taught in their own right but also subjects will have a nationwide allocated medium of instruction, irrespective of the usual language of instruction. Kazakh History will be taught in Kazakh in all schools; World History in Russian; and Biology, Physics Chemistry and Informatics (IT) in English (NAO, 2017) [10]. There has been much discourse on this around the nation and the latest indicators to teachers are that there is some maneuverability in this (NAO, 2017) but, as yet, the aim remains that this will happen. Apart from the English initiative in schools, other elements to the trilingual policy such as what is happening in universities is less clear as evident in the recent Youth Survey whereby 35% of respondents aged 14-17 and 45% of 26-27 year-olds reported that they believed that they «lack knowledge of English language» (OECD, 2017, p.278) [11].

Indeed, as another signal to the difficulties likely to be encountered with the advancement of English in Kazakhstan, there is a relatively low starting point to the current levels of English taught in schools; as illustrated in Appendix A which shows the numbers and performances of school leavers in national tests. Not only are there regional differences visible here but also it can be seen that taking English as an option is not popular at present despite the scores generally being above average compared to the compulsory elements to the test. The regional trend is for those in the two cities of Almaty and Astana to have around double the number of entrants to the test (18% and 19% respectively of all test entrants) compared to most other regions. The general picture is to have less than one in nine entrants to the national test choosing English (i.e. < 11%). In South Kazakhstan, only around one in 25 school leavers (4%) takes English as an option suggesting either there is no demand or liking for the subject or there simply are not enough teachers of the subject to make this viable. However, since only one optional subject is allowed in the national test at present, those taking a science would preclude themselves from these data so actually seeing the true amount of English present in itself schools is problematic and Appendix A, at best shows there are regional differences by illustrating a proxy measure of the likely number of English subject teachers able to support their science colleagues using English as a medium of instruction.

As preparation for the roll out of the trilingual policy, a large professional development initiative has been agreed (MoES, 2017) [12] and launched for 2017-2019 that aims to teach teachers English and scientific terminology in order to teach the upper two grades in all secondary schools through the medium of English. This is a grand ambition but not without some preparation since a growing network of schools, Nazarbayev Intellectual Schools (NIS), have been doing just this since 2012 while the Network of 'Daryn' Special Schools and Kazakh-Turkish Lyceums have been practicing teaching subjects in English since 2000. Starting with a few schools, there is now at least one Nazarbayev Intellectual School in every oblast which teaches in three languages and delivers senior grades' science classes in English. Apart from acting out the trilingual policy, the NIS organisation and its Centre of Excellence programme have been responsible for a cascade model of teacher professional development that as of 2016 has reached around 40,000 teachers in Kazakhstan. The primary aim of the programme has been to introduce more progressive methods of teaching, mentoring and leadership throughout the country. As indicated in Appendix B, this has been a national endeavor covering 43,771 teacher attendances and reaching nearly half the schools

in Kazakhstan in 2015-16 alone albeit with some regional variations in the proportions of teachers and schools involved.

The above leads to the research question posed for this inquiry.

How well do current conceptualisations of what constitutes a CLIL approach fit in terms of teachers commencing a Professional Development Programme in Kazakhstan?

Method

The methodology adopted for this research was theory-led inasmuch as it sought to evaluate the novel application of an extant theory to the post-Soviet context of Kazakhstan. In particular, it aimed to evaluate the performance of a scale to reflect the conceptualisation and associated pedagogies of CLIL based on the literature by Coyle's and others (c.f. Coyle, Hood & Marsh, 2010 and Dalton-Puffer, 2007) [3-4]. The essential features of this are to see the following components as addressed within the planning and practice of teachers using a CLIL approach: content, cognition, communication (including the checking of learning), culture and context. Description of the basis of questions included in the survey, as they were intended to load on these features, are summarised in Table 1.

Table 1 – Items used in the questionnaire to assess attitudes of teachers commencing a PD programme towards teaching practices associated with adopting a CLIL approach

Conceptual element to a CLIL pedagogy	Item ref.	Question text
Content (Coyle et al, 2010)	1	Lessons conducted in English should contain new knowledge and not simply represent material learnt previously in Kazakh or Russian
	2	Lesson planning should always be led by the curriculum content for my subject
Cognition (Coyle et al, 2010)	3	In my lesson planning I should aim for the same level of thinking about the subject from my students as if I were using Kazakh or Russian
	4	Teachers and students expectations for learning (the subject) should be high
	5	Teachers and students expectations for learning (English) should be high
	6	All students can be included in classes with English as a medium of instruction irrespective of their age, linguistic level and background
Culture (Coyle et al, 2010)	7	Students who can speak, read and write English have greater access to further learning opportunities and by extension great opportunities to contribute to the development of Kazakhstan and the world at large.
Communication and checking learning (Dalton-Puffer, 2007 and Coyle et al, 2010) [4-3]	8	Classroom interactions and questions posed by teachers in English are important aspects of the learning process for the subject being taught
	9	Lesson planning should be based on ensuring I give my students opportunities to ask questions and discuss materials in English
	10	Units of work for students should include both formative and summative assessment of students' content knowledge and related skills in the subject they are learning
	11	Units of work for students should include both formative and summative assessment of students' knowledge and skills in their use of English
External factors – local context and policy (new items to assess the context of Kazakhstan)	12	Measures need to be put in place to ensure that students studying IT and science through English can also discuss their learning in Kazakh and Russian.
	13	There has to be some flexibility in how English is used as a medium of instruction where possibly having materials in English but discussing these initially in Kazakh or Russian could act as a strategy.
	14	In schools where IT and science teachers are not yet prepared to teach through English, other subjects could be taught through English if qualified teachers are available.
	15	There has to be some flexibility in how English is used as a medium of instruction across different types of schools in Kazakhstan.
	16	Universities will need to take account of what students do at school with regard to the medium of instruction of their subject

All 4086 participants of the cohort of the PDP for 2017 who were being taught by one of the three academic providers of such courses were emailed an anonymous link to the online survey and asked to complete the survey as soon as possible. Some email addresses were not operational but it is known that at least 2023 course attendees received the request for participation. The course ran from September 4th to November 17th in 2017 and so all data presented here were collected within the first half of the 11-week long schedule. Data collection commenced on September 14th and ended on October 13th. Of the 1542 people taking the survey, the final dataset was based on the 1257 participants who had provided a full set of responses to all closed-question items. The only means of identification collected from participants was in terms of the location they were attending the programme. No other details were collected.

The survey was available in Kazakh, Russian and English with participants free to choose whatever language they preferred from a drop-down option at the start of the survey. The majority (63%) chose to take the survey in Russian and the remainder in Kazakh. None chose to take the survey in English. The survey had been compiled in English and translated by native-speakers of Kazakh and Russian within the research team who are educated to at least Masters level. Terminology was checked for common understanding and meaning between the team of researchers across the three languages. Participants initially received a short description of the purposes and scope of the research project alongside a named point of contact should they wish further information or assurance. They next gave informed consent to take part in the survey by choosing an option to participate. Subsequently, they were asked to indicate from which region in Kazakhstan they came. Finally, participants were asked to complete the twelve attitudinal questions shown in Table 1 as well as two open questions that asked, firstly, to describe ‘Expectations about your participation in the Professional Development Programme‘ and, secondly, to ‘Please indicate your goals in participating in this Professional Development Program’. Analysis of the open questions is not included in this paper but will form the basis for subsequent publications.

Results

Course attendees and survey participants as drawn from various regions are shown in Table 2.

Table 2 – Regional overview of course attendees and survey participants

Region	Number of course attendees	% of overall course attendees	Number of survey participants	% of overall survey participants	% of attendees taking the survey
Akmola	262	6.4	59	4.7	22.5
Aktobe	397	9.6	124	9.9	31.2
Almaty region	440	10.7	131	10.4	29.8
Atyrau	152	3.7	36	2.9	23.7
East Kazakhstan	195	4.7	62	4.9	31.8
Zhambyl	274	6.6	98	7.8	35.8
West Kazakhstan	181	4.4	53	4.2	29.3
Karaganda	190	4.6	75	6.0	39.5
Kostanay	210	5.1	102	8.1	48.6
Kyzylorda	345	8.4	71	5.6	20.6
Mangystau	119	2.9	46	3.7	38.7
Pavlodar	208	5.0	90	7.2	43.3
North Kazakhstan	195	4.7	79	6.3	40.5
South Kazakhstan	717	17.4	129	10.3	18.0
Almaty city	129	3.1	52	4.1	40.3
Astana city	201	4.9	50	4.0	24.9
Total	4125	100.0	1257	100.0	30.5

Exploratory Factor Analysis using Principal Component Analysis of the 12 items produced three factors that represented in total of 47% of the variance in results. Visual inspection of the Scree plot associated with this analysis established that the first three factors extracted were a seemingly fair reduction of the overall data and no more significant factors existed. Table 3 shows the items that loaded on each factor with the Varimax rotated loading for each item.

Table 3 – List of items and their factorial loading from a data reduction analysis of the 12-item survey to three factors identified by Exploratory Factor Analysis

Item	Factor		
	External factors	**Learning expectations**	**Checking learning**
12. Measures need to be put in place to ensure that students studying IT and science through English can also discuss their learning in Kazakh and Russian.	0.722		
13. There has to be some flexibility in how English is used as a medium of instruction where possibly having materials in English but discussing these initially in Kazakh or Russian could act as a strategy.	0.683		
15. There has to be some flexibility across schools in how English is used as a medium of instruction across different types of schools in Kazakhstan.	0.557		
16. Universities will need to take account of what students do at school with regard to the medium of instruction of their subject.	0.540		
2. Lesson planning should always be led by the curriculum content for my subject.	0.528		
14. In schools where IT and science teachers are not yet prepared to teach through English, other subjects could be taught through English if qualified teachers are available.	0.481		
1. Lessons conducted in English should contain new knowledge and not simply represent material learnt previously in Kazakh or Russian.		0.644	
6. All students can be included in classes with English as a medium of instruction irrespective of their age, linguistic level and background.		0.637	
4. Teachers and students' expectations for learning subject content should be high.		0.616	
3. In my lesson planning I should aim for the same level of thinking about the subject from my students as if I were using Kazakh or Russian.		0.553	
7. Students who can speak, read and write English have greater access to further learning opportunities and by extension great opportunities to contribute to the development of Kazakhstan, and the world at large.		0.527	
5. Teachers and students expectations for learning English should be high.		0.518	
11. Units of work for students should include both formative and summative assessment of students' knowledge and skills in their use of English.			0.777
10. Units of work for students should include both formative and summative assessment of students' content knowledge and related skills in the subject they are learning.			0.741
9. Lesson planning should be based on ensuring I give my students opportunities to ask questions and discuss materials in English.			0.550
8. Classroom interactions and questions posed by teachers in English are important aspects of the learning process for the subject being taught.			0.528

The first factor extracted represented 32.7% of the variance and was formed from the six items that reflected attitudes towards external factors that needed consideration in implementation of the trilingual policy. The second factor, which represented 8.6% of the variance, was drawn from six items and related to learning in the classroom. The third factor, representing 6.5% of the variance, was formed from four items on attitudes towards checking of learning through assessment and communication between students and teachers. Chronbach alpha reliability values for each of the three factors were, in order of their extraction: 0.70; 0.73 and 0.75. This indicated that the 12-items could be reliably represented by three subscales that could be examined for regional differences. One-way ANOVA of the three sub-scales showed that there was no difference by location for external factors in the implementation of the trilingual policy ($F(15,1241) = 1.29$, $p > 0.05$) but there was significant difference by region in terms of the other two factors: learning expectations ($F(15,1241) = 3.35$, $p < 0.01$) and checking learning ($F(15,1241) = 2.42$, $p < 0.01$). Table 4 presents Tukey HSD Post-Hoc tests that illustrate the different subsets by region of the teacher-participants of the PDP in their attitudes towards learning expectations. Table 5 presents Tukey HSD Post-Hoc tests that illustrate the different subsets by region of the teacher-participants of the PDP for their attitudes towards checking learning.

Table 4 – Tukey HSD Post-Hoc test results to illustrate mean scale values and different subsets by region of the teacher-participants of the PDP in their attitudes towards learning expectations of their students when teaching their subject in English

Location	**N**	**Mean value and subset for alpha = 0.05**		
		1	**2**	**3**
Akmola	59	3.53		
North Kazakhstan	79	3.58	3.58	
Almaty region	131	3.59	3.59	
East Kazakhstan	62	3.60	3.60	
South Kazakhstan	129	3.60	3.60	
Zhambyl	98	3.67	3.67	3.67
Kostanay	102	3.67	3.67	3.67
Almaty	52	3.69	3.69	3.69
Aktobe	124	3.75	3.75	3.75
Mangystau	46	3.80	3.80	3.80
Pavlodar	90	3.81	3.81	3.81
Astana	50	3.82	3.82	3.82
West Kazakhstan	53	3.86	3.86	3.86
Karaganda	75		3.92	3.92
Kyzylorda	71		3.93	3.93
Atyrau	36			3.99

As can be seen from Table 4, in terms of the school teachers' students' learning expectations from teaching their subject in English, the course participants from Akmola had significantly lower expectations than those from Atyrau, Kyzylorda, Karaganda and all other regions. Furthermore, school teachers from Atyrau on the PDP had learning expectations of their students that were significantly higher, not only in relation to those from Akmola but also compared to those from North Kazakhstan, Almaty region, East Kazakhstan, South Kazakhstan and all other regions. Evidently, the 59 teachers

from Akmola and the 36 from Atyrau appear to form the extreme ends of opinion on how well students' learning expectations are likely to be set and met by teaching their subject in English.

Table 5 – Tukey HSD Post-Hoc test results to illustrate mean scale values and different subsets by region of the teacher-participants of the PDP in their attitudes towards checking learning when teaching their subject in English

Location	N	Mean value and subset for alpha = 0.05	
		1	2
Akmola	59	3.54	
South Kazakhstan	129	3.68	3.68
Zhambyl	98	3.69	3.69
Almaty	52	3.72	3.72
Kostanay	102	3.74	3.74
North Kazakhstan	79	3.74	3.74
East Kazakhstan	62	3.77	3.77
Almaty region	131	3.77	3.77
Mangystau	46	3.81	3.81
Aktobe	124	3.83	3.83
Atyrau	36	3.88	3.88
Pavlodar	90	3.89	3.89
Astana	50	3.92	3.92
Kyzylorda	71		3.94
West Kazakhstan	53		3.97
Karaganda	75		3.97

Again, Table 5 shows that attitudes of course participants from Akmola were different to others albeit in this case towards checking subject content and language learning of their students through assessment and classroom exchanges. In more detail, it appears that the 59 teachers from Akmola were significantly less positive than the 75 course attendees from Karaganda, the 53 from West Kazakhstan, the 71 from Kyzylorda and all other regions. Indeed, the 199 school teachers from Karaganda, West Kazakhstan and Kyzylorda commencing the PDP had a more positive attitude towards communication and checking of learning than the 1058 participants from all other regions.

Again, Table 5 shows that attitudes of course participants from Akmola were different to others albeit in this case towards checking subject content and language learning of their students through assessment and classroom exchanges. In more detail, it appears that the 59 teachers from Akmola were significantly less positive than the 75 course attendees from Karaganda, the 53 from West Kazakhstan, the 71 from Kyzylorda and all other regions. Indeed, the 199 school teachers from Karaganda, West Kazakhstan and Kyzylorda commencing the PDP had a more positive attitude towards communication and checking of learning than the 1058 participants from all other regions.

Discussion

This research set out to answer the question 'How well do current conceptualisations of what constitutes a CLIL approach fit in terms of teachers commencing a Professional Development Programme in Kazakhstan?' It appeared to do this well inasmuch as the hypothesised factors from a CLIL approach seemed to fit the data reasonably well based on analysis using principal components

exploratory factor analysis. It remains to be seen whether confirmatory factor analysis would allow this to be completely establish the loadings but perhaps, on first examination, there are departures from the Western model of a CLIL approach that need discussion first. The primary departure is that curriculum content loads as an external factor rather than an internal factor as far as the teachers are concerned. This is unexpected in comparison to Coyle et al's (2010) conceptualisation of a CLIL approach unless we examine the context of Kazakhstan more. Kazakhstan follows a very top-led approach to the curriculum and there is not only a national curriculum in terms of content but also one in terms of timetabled delivery of the curriculum and inspection and accountability procedures to ensure teachers' compliance with expected processes, reporting mechanisms, lesson planning and so forth (Wilson et al, 2013) [13]. It would be unusual for teachers to feel they had the autonomy to stand independently of such a professional landscape as they do in some Western contexts such as elsewhere where teacher agency and individualised teacher identity are better understood and permitted (e.g. Sloan, 2006 and Korthagen, 2004) [14-15]. Hence, it is not surprising that teachers see curriculum content as something beyond their control and conceptualise the curriculum content along with broader items on educational policy such as the trilingual policy itself and what happens in universities.

Apart from support for the hypothesised model of a CLIL approach, the first finding from the research is the invariant nature of teachers' beliefs around external factors that contribute towards matters associated with not only the trilingual policy itself but how best it can act out in schools. It is notable that there are no regional differences in how teachers see the landscape in which they have to teach their subjects through a second language and perhaps this is a further sign that there is a very top-down presence where local needs and local adaptations are not perceived, conceptualised or forcibly expressed.

However, by contrast, a second finding to the above research is that regional variations do appear in terms of learning expectations and checking learning. This relates more assuredly to conceptualisations rather than attitudinal comment. Discovering that the preparedness of teachers commencing a professional development programme to teach English and CLIL varies region by region is a useful outcome to the research in that tailoring courses to fit local needs can be considered. Appendices A and B give some background to this and may afford one of two initial explanations based, respectively, on the level of English as a taught subject in schools its own right and the preponderances regionally of more general professional development programmes. It would seem that the latter of these acts as a more dominant explanation than the former since the region with the poorest initial conceptualisation of what a CLIL approach may be has one of the lowest coverage of general professional development programmes and yet the region with the lowest apparent level of teaching English in schools has the strongest ideas on how to teach with a CLIL approach. More investigation and better data for these external factors are required before hard conclusions can be drawn on this front. However, this is a very interesting outcome to the work here and one recommendation to those delivering any type of professional development course is not to merely focus on the topic of the programme but to look at openness to learn, previous experiences with professional development opportunities and motivation to engage more generally. Existing attitudes towards engaging in professional development need to be accounted for and worked on at the outset as attendees commence their courses. Thereafter, the learning objectives are far more likely to be effectively and efficiently delivered. Many teachers may have forgotten to learn themselves and be unaccustomed to the role reversal required to be a learner themselves.

The final point for discussion is that here clearly needs to be a follow up to the research here to see how the course attendees commencing the programme fared. This is beyond the scope of the paper here but will be available in forthcoming publications that take account of the lessons learnt here in terms of modelling fundamental factors to conceptualising and adopting a CLIL approach to teaching.

Conclusions

This research provides a promising start to fitting a conceptually grounded model of factors behind adopting a CLIL approach towards teaching a subject through a second language. This is a useful development for Kazakhstan which is rolling a national policy towards trilingual education. Based on the findings of the research here, a reconfigured model of a less Western conceptualisation of the CLIL approach needs to be conducted in relation to the context of Kazakhstan. This would reposition curriculum content to be an external factor. Once tested, using Confirmatory Factor Analysis, this model would be of good use in assessing how the trilingual policy is likely to act out in classrooms

around Kazakhstan before its full roll out in 2019. If a satisfactory model is confirmed, measures of a CLIL approach on commencing and then completing professional development programmes with learning objectives to promote this can inform on the success of such courses as they operate around Kazakhstan. In addition, this research can begin to assess causal factors behind regional differences. This would not only examine openness, attitudes and beliefs towards understanding and adopting an effective CLIL approach but also potentially reveal unevenness in the more general professional development of teachers.

Acknowledgements

The present paper has stemmed from the research project conducted by Nazarbayev University Graduate School of Education along with the University of Cambridge Faculty of Education and Dr. Peeter Mehisto with funds allocated from Nazarbayev University. The opinions expressed are those of the authors.

References

1 Mehisto, P., Marsh, D., Frigols, M. J. Uncovering CLIL: Content and Language Integrated Learning in Bilingual and Multilingual Education. – Macmillan, 2008.

2 Coyle, D. A pedagogical approach from the European Perspective. In Encyclopedia of language and education. – 2008. – Vol. 4. – P. 97–111.

3 Coyle, D., Hood, P., Marsh, D. CLIL Content and Language Integrated Learning. – Cambridge: Cambridge University Press, 2010.

4 Dalton-Puffer, C. Discourse in Content and Language Integrated Learning (CLIL) Classrooms. – Amsterdam: John Benjamins, 2007.

5 Vollmer. Language Across the Curriculum / Published by Language Policy Division. // DG IV – Directorate of School, Out-of-School and Higher Education Council of Europe, F-67075 Strasbourg Cedex. 2006. https://www.coe.int/t/dg4/linguistic/Source/Vollmer_LAC_EN.doc

6 El-Bilawi, N.H., Nasser, I. Teachers' professional development as a pathway for educational reform in Egypt // Reflective Practice. – 2017. –V. 18:2. – P. 147-160. DOI:10.1080/14623943.2016.1251406

7 State Program of Development and Functioning of Languages of Kazakhstan for 2011-2020. Adopted by the Decree of the President of Kazakhstan No.110 dated June 29, 2011. – Astana, MoES, 2011.

8 OECD Reviews of National Policies for Education: Secondary Education in Kazakhstan OECD Publishing // Available at http://www.oecd-ilibrary.org/education/reviews-of-national-policies-for-education-secondary-education-in-kazakhstan_9789264205208-en 2014

9 Mehisto, P., Kambatyrova, A., & Nurseitova, K. Three in one? Trilingualism in policy and educational practice // D. Bridges (Ed.). Educational reform and internationalisation: the case of school reform in Kazakhstan. – Cambridge: Cambridge University Press, 2014. – P. 152-176.

10 Instructive and methodological letter 'On the specific organisation of the educational process in the schools of the Republic of Kazakhstan for the 2017-18 academic year / NAO National Academy of Education named after I. Altynsarin. 2017 // http://nao.kz/loader/fromorg/2/24 Дата доступа 10.10.2017.

11 Reviews of National Policies for Education: Higher Education in Kazakhstan. – OECD Publishing, OECD, 2017 // Available at http://www.oecd-ilibrary.org/education/higher-education-in-kazakhstan-2017_9789264268531-en

12 On the approval of educational programs for advanced training courses for teachers of pre-school, secondary, supplementary, and special education. Order of the Minister of Education and Science of the Republic of Kazakhstan of January 28, 2016 No. 92. Registered in the Ministry of Justice of the Republic of Kazakhstan on February 29, 2016 No. 13306 // Available online at http://adilet.zan.kz/rus/docs/V1600013306 MoES, 2017.

13 Wilson, E., Turner, F., Sharimova, A. and Brownhill, S. Reform at Scale: Teacher Development in Kazakhstan. [Online]. 2013 // Available at: https://www.educ.cam.ac.uk/people/staff/wilson/TeacherEducationReform-in-Kazakhstan29082013.pdf (Accessed: 22 November 2017).

14 Sloan, K. Teacher Identity and Agency in School Worlds: Beyond the All-Good/All-Bad Discourse on Accountability-Explicit Curriculum Policies. Curriculum Inquiry, 2006. – 36. – P. 119–152 // doi:10.1111/j.1467-873X.2006.00350.x

15 Korthagen, F. J. In search of the essence of a good teacher: towards a more holistic approach in teacher education // Teaching and Teacher Education. – 2004. – N20. – P. 77-97.

References

1 Coyle, D. (2008). A pedagogical approach from the European Perspective. In Encyclopedia of language and education, 4, 97–111.

2 Coyle, D., Hood, P., & Marsh, D. (2010). CLIL Content and Language Integrated Learning. Cambridge: Cambridge University Press.

3 Dalton-Puffer, C. (2007). Discourse in Content and Language Integrated Learning (CLIL) Classrooms. Amsterdam: John Benjamins.

4 El-Bilawi, N.H., & Nasser, I. (2017) Teachers' professional development as a pathway for educational reform in Egypt, Reflective Practice, 18:2, 147-160, DOI:10.1080/14623943.2016.1251406

5 Korthagen, F. J. (2004). In search of the essence of a good teacher: towards a more holistic approach in teacher education. Teaching and Teacher Education, 20, 77-97.

6 Mehisto, P., Kambatyrova, A., & Nurseitova, K. (2014). Three in one? Trilingualism in policy and educational practice. In D. Bridges (Ed.), Educational reform and internationalisation: the case of school reform in Kazakhstan. (pp. 152-176). Cambridge: Cambridge University Press.

7 Mehisto, P., Marsh, D., & Frigols, M. J. (2008). Uncovering CLIL: Content and Language Integrated Learning in Bilingual and Multilingual Education. Macmillan.

8 MoES (2011) State Program of Development and Functioning of Languages of Kazakhstan for 2011-2020. Adopted by the Decree of the President of Kazakhstan No.110 dated June 29, 2011.

9 MoES (2017). On the approval of educational programs for advanced training courses for teachers of pre-school, secondary, supplementary, and special education. Order of the Minister of Education and Science of the Republic of Kazakhstan of January 28, 2016 No. 92. Registered in the Ministry of Justice of the Republic of Kazakhstan on February 29, 2016 No. 13306. Available online at http://adilet.zan.kz/rus/docs/V1600013306

10 NAO (2017). National Academy of Education named after I. Altynsarin. (2017) Instructive and methodological letter 'On the specific organisation of the educational process in the schools of the Republic of Kazakhstan for the 2017-18 academic year. Available online (in Russian) at http://nao.kz/loader/fromorg/2/24

11 OECD (2014) Reviews of National Policies for Education: Secondary Education in Kazakhstan OECD Publishing., Available at http://www.oecd-ilibrary.org/education/reviews-of-national-policies-for-education-secondary-education-in-kazakhstan_9789264205208-en

12 OECD (2017). Reviews of National Policies for Education: Higher Education in Kazakhstan. OECD Publishing., Available at http://www.oecd-ilibrary.org/education/higher-education-in-kazakhstan-2017_9789264268531-en

13 Sloan, K. (2006), Teacher Identity and Agency in School Worlds: Beyond the All-Good/All-Bad Discourse on Accountability-Explicit Curriculum Policies. Curriculum Inquiry, 36, 119–152. doi:10.1111/j.1467-873X.2006.00350.x

14 Vollmer, (2006). Language Across the Curriculum. Published by Language Policy Division. DG IV – Directorate of School, Out-of-School and Higher Education Council of Europe, F-67075 Strasbourg Cedex. Available at https://www.coe.int/t/dg4/linguistic/Source/Vollmer_LAC_EN.doc

15 Wilson, E., Turner, F., Sharimova, A. and Brownhill, S. (2013). Reform at Scale: Teacher Development in Kazakhstan. [Online]. Available at: https://www.educ.cam.ac.uk/people/staff/wilson/TeacherEducationReform-in-Kazakhstan29082013.pdf (Accessed: 22 November 2017).

Appendix A:

Analysis of the 2015 national Unified National Test (UNT) results (taken from http://ent2017.kz/) produced the figures shown below in Table B.1.

Table B.1 – National and regional overview of school students' English UNT entries and scores

Region		2015 UNT data					
	total N taking UNT	**Average total UNT score in 4 subjects**	**Average UNT score per compulsory subject**	**N taking English**	**% of total taking English UNT option**	**English UNT score**	**ratio of English score to 4-subject UNT score**
Akmola	3021	63.68	15.92	259	8.57	19.14	1.20
Aktobe	4620	67.60	16.90	317	6.86	19.37	1.15
Almaty region	9287	63.08	15.77	642	6.91	18.31	1.16
Atyrau	3527	49.68	12.42	302	8.56	15.23	1.23
East Kazakhstan	5950	65.54	16.39	426	7.16	18.36	1.12
Zhambyl	5921	65.13	16.28	390	6.59	18.52	1.14
West Kazakhstan	3116	68.15	17.04	207	6.64	19.34	1.14
Karaganda	4977	65.24	16.31	518	10.41	18.83	1.15
Kostanay	2676	63.34	15.84	232	8.67	19.04	1.20
Kyzylorda	4182	68.17	17.04	213	5.09	19.23	1.13
Mangystau	2736	62.92	15.73	194	7.09	17.84	1.13
Pavlodar	2608	64.40	16.10	213	8.17	19.68	1.22
North Kazakhstan	2356	62.36	15.59	256	10.87	19.50	1.25
South Kazakhstan	18125	66.12	16.53	762	4.20	18.75	1.13
Almaty city	5426	74.63	18.66	975	17.97	20.22	1.08
Astana city	3398	70.33	17.58	636	18.72	19.63	1.12
Totals (oblast data)	**81926**	**65.45**	**16.36**	**6542**	**7.99**	**18.77**	**1.15**
1156 participants in Republican schools and 180 school students in Russian schools not included							

Appendix B:

Professional Development Courses delivered in regions by Nazarbayev Intellectual Schools as described on page 79 of their 2016 Annual Report as Appendix 7, available here: http://nis.edu.kz/en/about/reports/?id=6351. To indicate how proportionate these are in relation to the number of schools and school students, these figures are accompanied by the number of schools in 2012-13 in each region (OECD figures available here as Table 2.1 on page 35 of OECD Country Report for Kazakhstan https://www.oecd.org/edu/school/CBR_Kazakhstan_english_final.pdf)

Table C.1 – Experience sharing by NIS for comprehensive schools during 2015-2016 and reach by region

Region	Numbers of participants					Total # of schools	OECD figures		Proportions of schools and average number of students reached by these PD programmes	
	Work-shops	Trai-nings	Mas-ter classes	Lan-guage courses	Total		# general schools	# students	% schools reached by NIS training	# students per teacher reached by NIS training
Akmola	197	206	133	8	544	85	631	102899	13	189
Aktobe	486	298	240	54	1078	102	445	114036	23	106
Almaty region	1829	521	501	25	2876	583	741	298355	79	104
Atyrau	625	415	391	10	1441	79	198	94622	40	66
East Kazakhstan	4159	426	3586	16	8187	641	698	167586	92	20
Zhambyl	685	274	141	12	1112	90	456	182324	20	164
West Kazakhstan	2331	343	185	17	2876	173	412	87441	42	30
Karaganda	3077	507	349	20	3953	140	556	171046	25	43
Kostanay	908	401	238	16	1563	50	568	100803	9	64
Kyzylorda	1463	607	504	31	2605	298	290	125729	103	48
Mangystau	703	538	876	59	2176	17	123	96117	14	44
Pavlodar	2997	737	699	43	4476	67	411	88148	16	20
North Kazakhstan	648	391	142	8	1189	533	585	73126	91	62
South Kazakhstan	1475	543	351	34	2403	76	1019	534195	7	222
Almaty city	399	252	163	32	846	65	181	163478	36	193
Astana city	4367	1075	966	38	6446	80	70	83568	114	13
Totals	**26349**	**7534**	**9465**	**423**	**43771**	**3079**	**6753**	**2493479**	**46**	**57**